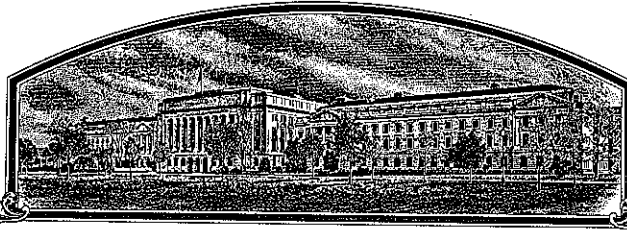


No.

9300028



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Plant Breeders 1, Inc.*

Whereas, THERE HAS BEEN PRESENTED TO THE  
**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Citation'

In Testimony Whereof, I have hereunto set  
my hand and caused the seal of the Plant  
Variety Protection Office to be affixed  
at the City of Washington, D.C.  
this 31st day of July in  
the year of our Lord one thousand nine  
hundred and ninety-five.

*Alfred R. A. H. H.*  
Acting  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Jan F. H. H. H.*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) <b>Plant Breeders 1 Inc.</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. <b>PB1-88-6R-401</b>	3. VARIETY NAME <b>Citation 18AM 1995</b>
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) <b>851 E 7th Street Moscow, Idaho 83843</b>		5. PHONE (Include area code) <b>(208)882-4483</b>	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER <b>9300028</b> F I L I N G Date <b>Nov. 18, 1992</b> Time <b>11:55</b> <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: <b>\$ 2150.-</b> Date <b>Nov. 16, 1992</b> R E C E I V E D Certificate Fee: <b>\$ 250.00</b> Date <b>June 8, 1995</b>
6. GENUS AND SPECIES NAME <b>Hordeum vulgare</b>	7. FAMILY NAME (Botanical) <b>Gramineae</b>		
8. CROP KIND NAME (Common Name) <b>Barley</b>	9. DATE OF DETERMINATION <b>August 1, 1987</b>		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <b>Corporation</b>			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION <b>Idaho</b>		12. DATE OF INCORPORATION <b>January 1, 1985</b>	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <b>Wayne L. McProud 851 E 7th Street Moscow, Idaho 83843</b> <b>(208)882-4483</b>			

PHONE (Include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☒ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office **November 13, 1992**

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)  
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?  
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?  
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: \_\_\_\_\_) ☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?  
☐ YES (If "YES," give names of countries and dates) ☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) <b>Wayne L. McProud</b>	CAPACITY OR TITLE <b>President Plant Breeders 1 Inc</b>	DATE <b>11/13/92</b>
SIGNATURE OF APPLICANT (Owner(s)) <b>Verna L. McProud</b>	CAPACITY OR TITLE <b>Secretary Plant Breeders 1 Inc.</b>	DATE <b>Nov. 13, 1992</b>

9300028

REVISED EXHIBIT A:

ORIGIN AND BREEDING HISTORY OF

~~'PB1-88-6R-401'~~

*Citation AAA 18 Apr 1995*

'PB1-88-6R-401' resulted from the cross CC32/201//201///201. CC32 is a semi dwarf, male sterile, single plant selection from the male sterile facilitated recurrent selection population composite cross CC XXXII developed by R. T. Ramage, USDA-ARS, Tucson, AZ. The designation 201 represents various single plant selections from a six row, male sterile assisted, bulk population developed by Plant Breeders 1 (PB1). 201 is made up of crosses among six row Pacific Northwest spring barleys crossed with mid-western Manchurian type barleys. All crosses were made onto male sterile female parents.

'PB1-88-6R-401' originated as a 1986 F3 single plant selection. The line leading to 'PB1-88-6R-401' was selected from PB1's 1987 screening trials. This 1987 selection was based on yield and agronomic evaluation. In subsequent years this line was tested in PB1's preliminary and advanced yield trials and in regional testing programs. 'PB1-88-6R-401' was head hilled in 1991 in preparation for a 1992 breeders seed increase. 'PB1-88-6R-401' has remained stable and uniform since its selection from the 1987 screening trial.

## REVISED EXHIBIT B: NOVELTY STATEMENT

*Citation MAA 18 AM 1995*  
~~'PB1-88-6R-401'~~ is most similar to the six row spring barley 'Steptoe'. 'PB1-88-6R-401' differs from 'Steptoe' in 'PB1-88-6R-401' having a greater testweight (the difference shown to be highly significant in Table A) and a greater plant height (the difference shown to be highly significant in Table B). 'PB1-88-6R-401' has, at booting, an erect flag leaf (at booting 'Steptoe's' flag leaf droops), rough lemma awns ('Steptoe's' lemma awns are semi smooth) and short rachilla hairs ('Steptoe's' rachilla hairs are long).

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION  
BELTSVILLE, MARYLAND 20705EXHIBIT C  
(Barley)OBJECTIVE DESCRIPTION OF VARIETY  
BARLEY (*HORDEUM VULGARE*)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Plant Breeders 1 Inc.

ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code)

851 E 7th Street  
Moscow, Idaho 83843

FOR OFFICIAL USE ONLY

PVPO NUMBER

9300028

VARIETY NAME OR TEMPORARY  
DESIGNATION

Citation: AA 18 Apr 19

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (i.e.  or ) when number is either 99 or less or 9 or less.

## 1. GROWTH HABIT:

 1 - SPRING    2 - FACULTATIVE WINTER    3 - WINTER     Early Growth: 1 - PROSTRATE    2 - SEMIPROSTRATE  
3 - ERECT

## 2. MATURITY (50% Flowering):

 1 - EARLY (California Mariout)    2 - MIDSEASON (Betzes)    3 - LATE (Frontier) No. of days Earlier than .....  } 1 - BETZES    2 - CALIFORNIA MARIOUT    3 - CONQUEST    4 - DICKSON No. of days Later than .....  } 5 - PIROLINE    6 - PRIMUS    7 - UNITAN

## 3. PLANT HEIGHT (From soil level to top of head):

 1 - SEMIDWARF    2 - SHORT (California Mariout)    3 - MEDIUM TALL (Betzes)    4 - TALL (Conquest) Cm. Shorter than .....  } 1 - BETZES    2 - CALIFORNIA MARIOUT    3 - CONQUEST    4 - DICKSON Cm. Taller than .....  } 5 - PIROLINE    6 - PRIMUS    7 - UNITAN

## 4. STEM:

 Exertion (Flag to spike at maturity): 1 - 0 - 3 cm.    2 - 3 - 10 cm.    3 - 10 - 15 cm.     Anthocyanin: 1 - ABSENT    2 - PRESENT NO. OF NODES (Originating from node above ground) Collar Shape: 1 - CLOSED    2 - V-SHAPED    3 - OPEN    4 - MODIFIED CLOSED OR OPEN     Shape of Neck: 1 - STRAIGHT    2 - SNAKY  
3 - OTHER (Specify) \_\_\_\_\_

## 5. LEAF:

 Basal leaf sheath (seedling): 1 - GLABROUS    2 - PUBESCENT     Position of flag leaf (at boot stage): 1 - DROOPING  
2 - UPRIGHT Waxiness: 1 - ABSENT (Glossy)    2 - SLIGHTLY WAXY    3 - WAXY     MM. WIDTH (First leaf below flag leaf) CM. LENGTH (First leaf below flag leaf)     Anthocyanin in leaf sheath: 1 - ABSENT    2 - PRESENT

## 6. HEAD:

 Type: 1 - TWO-ROWED    2 - SIX-ROWED     Density: 1 - LAX    2 - ERECT (Not dense)  
3 - ERECT (Dense) Shape: 1 - TAPERING    2 - STRAP    3 - CLAVATE    4 - OTHER (Specify) \_\_\_\_\_     Waxiness: 1 - ABSENT (Glossy)    2 - SLIGHTLY WAXY  
3 - WAXY Lateral Kernels Overlap: 1 - NONE    2 - AT TIP    3 - 1/4 - 1/2 OF HEAD     Rachis (Hair on edge): 1 - LACKING    2 - FEW    3 - COVERED

## 7. GLUME:

 Length: 1 - 1/3 OF LEMMA    2 - 1/2 OF LEMMA    3 - MORE THAN 1/2 OF LEMMA     Hairs: 1 - NONE    2 - SHORT    3 - LONG Hair covering: 1 - NONE    2 - RESTRICTED TO MIDDLE    3 - CONFINED TO BAND    4 - COMPLETELY COVERED Awns: 1 - LESS THAN EQUAL TO LENGTH OF GLUMES    2 - EQUAL TO LENGTH OF GLUMES  
3 - MORE THAN EQUAL TO LENGTH OF GLUMES Awn Surface: 1 - SMOOTH    2 - SEMISMOOTH    3 - ROUGH

## 8. LEMMA:

☐ 5 Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS AWNLESS ON LATERAL ROWS  
 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike)  
 5 = LONG (longer than spike) 6 = HOODED

☐ 3 Awn Surface: 0 = AWNLESS 1 = SMOOTH 2 = SEMISMOOTH 3 = ROUGH

☐ 1 Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS

☐ 1 Hair: 1 = ABSENT 2 = PRESENT

☐ 3 Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE  
 3 = TRANSVERSE CREASE

☐ 1 Rachilla Hairs: 1 = SHORT 2 = LONG

## 9. STIGMA:

☐ 2 Hairs: 1 = FEW 2 = MANY

## 10. SEED:

☐ 2 Type: 1 = NAKED 2 = COVERED

☐ 1 Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

☐ 3 Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.)  
 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

☐ 2 Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

☐ 1 Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE

☐ 0 ☐ 1 PERCENT ABORTIVE

☐ 3 ☐ 7 GMS. PER 1000 SEEDS

## 11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> 0 SEPTORIA	<input type="checkbox"/> 0 NET BLOTCH	<input type="checkbox"/> 0 SPOT BLOTCH	<input type="checkbox"/> 1 POWDERY MILDEW
<input type="checkbox"/> 0 LOOSE SMUT	<input type="checkbox"/> 0 BACTERIAL BLIGHT	<input type="checkbox"/> 0 COVERED SMUT	<input type="checkbox"/> 0 FALSE LOOSE SMUT
<input type="checkbox"/> 0 STEM RUST	<input type="checkbox"/> 0 LEAF RUST	<input type="checkbox"/> 0 SCAB	<input type="checkbox"/> 0 SCALD
<input type="checkbox"/> 0 AY	<input type="checkbox"/> 0 BSMV	<input type="checkbox"/> 0 BYDV	<input type="checkbox"/> 0 OTHER (Specify)

## 12. INSECT: (0 = Not tested, 1 = Susceptible 2 = Resistant)

<input type="checkbox"/> 0 GREEN BUG	<input type="checkbox"/> 0 ENGLISH GRAIN APHID	<input type="checkbox"/> 0 CHINCH BUG	<input type="checkbox"/> 0 ARMYWORM
<input type="checkbox"/> 0 GRASS HOPPERS	<input type="checkbox"/> 0 CERIAL LEAF BETTLE	<input type="checkbox"/> 0 OTHER (Specify)	
HESSIAN FLY RACES } <input type="checkbox"/> 0 GP <input type="checkbox"/> 0 A <input type="checkbox"/> 0 B <input type="checkbox"/> 0 C <input type="checkbox"/> 0 D <input type="checkbox"/> 0 E <input type="checkbox"/> 0 F <input type="checkbox"/> 0 G			

## 13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 DDT ☐ OTHER (Specify)

## 14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	<i>when</i> <input type="checkbox"/> Steptoe	Seed size	Steptoe <i>when</i>
Leaf size	Steptoe	Coleoptile elongation	Steptoe
Leaf color	Steptoe	Seedling pigmentation	Steptoe
Leaf carriage			

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

1. Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
2. Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
3. Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

Citation ANA 18 Apr 1995

EXHIBIT D: ADDITIONAL DESCRIPTION OF ~~'PB1-88-6R-401'~~

'PB1-88-6R-401' is a six row, feed type, spring barley, *Hordeum vulgare*. When planted in Nez Perce County, Idaho, 'PB1-88-6R-401' heads on average 79 days following seeding. 'PB1-88-6R-401' early growth is erect; basal leaf sheath glabrous, showing some red and purple color when under stress; at booting leaf color yellow green to green, flag leaf erect, twisted, waxy; first leaf below flag leaf mid-wide to wide (17 to 20 mm), mid-long to long (242 to 283 mm), lacking pubescence on both blade and sheath. Auricles at booting show some anthocyanin, glabrous; mature stems cream colored; nodes number 4 to 5, at flowering sometimes show anthocyanin; collar closed to V-shaped; head extension full to intermediate; plant height averages 100 cm. Spike is strap, dense, waxy, at maturity erect; lateral kernel overlap none to at tip; rachis edge covered with hairs; percentage sterile florets 1% to 3%. Glumes 1/2 lemma length; glume awns equal to little longer than glume, rough; lemma awns long, rough; lemma lacks teeth on nerves, lacks hairs; rachilla hairs short; base shape on dorsal side transverse crease. Kernels covered, slightly wrinkled, mid-long (8.9 to 9.3 mm); aleurone white; 1000 kernel weight 32 to 42 grams.

Citation AAA 18 Apr 1995

TABLE 1: COMPARING SIX ROWED SPRING BARLEYS 'PB1-88-6R-401' AND 'STEPTOE FOR YIELD \*

Year/Location	Steptoe	PB1-88-6R-401
1988 Culdesac ID	3213	4489
1988 Ferdinand ID	2087	1996
1988 Potlatch ID	2981	3138
1988 Quincy WA	4161	4776
1989 Culdesac ID	3574	2464
1989 Potlatch ID	2862	3584
1989 Ferdinand ID	2622	2919
1990 Culdesac ID	2331	2462
1990 Ferdinand ID	2041	2014
1990 Potlatch ID	3050	3083
1990 Tammany ID	3453	3619
1991 Tammany ID	2848	3416
1991 Ferdinand ID	3147	3124
1991 Lewiston ID	4200	4679
1991 Rimrock ID	3600	2800
1991 Genesee ID	4400	4400
1991 Culdesac ID	3800	3200
1991 Lethbridge ALB	5042	5506
1991 Fort Collins CO	6033	5970
1991 Aberdeen ID	8612	8728
1991 Bonners Ferry ID	7318	7434
1991 Moscow ID	5283	4426
1991 Bozeman MT	6006	4417
1991 Manhattan MT	5212	6042
1991 Klamath Falls OR	6693	6666
1991 Ontario OR	3311	4426
1991 Logan UT	5345	4819
1991 Pullman WA	4435	4846
1991 Powell WY	5961	6247
Average Yield	4262.8	4334.1
% Steptoe	100.0	101.7

\* Yields expressed in pounds per acre



930028

TABLE 1: COMPARING THE SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR TEST WEIGHT \*

Year/location	Steptoe	PB1-88-6R-401
1988 Culdesac ID	44.9	52.5
1988 Quincy WA	49.3	53.1
1988 Ferdinand WA	49.6	51.3
1988 Potlatch ID	49.6	50.9
1989 Culdesac ID	49.4	50.4
1989 Potlatch ID	45.8	47.0
1989 Ferdinand ID	46.1	47.7
1990 Culdesac ID	43.8	46.0
1990 Ferdinand ID	44.5	44.3
1990 Potlatch ID	42.0	46.2
1990 Tammany ID	46.6	51.4
1991 Tammany ID	46.2	50.6
1991 Ferdinand ID	42.1	45.5
1991 Lewiston ID	44.5	46.5
1991 Rimrock ID	45.0	45.0
1991 Genesee ID	46.0	49.5
1991 Culdesac ID	46.0	45.5
1991 Lethbridge ALB	50.5	51.6
1991 Fort Collins CO	48.8	51.1
1991 Aberdeen ID	50.9	53.5
1991 Bonners Ferry ID	48.4	49.4
1991 Moscow ID	48.5	50.5
1991 Bozeman MT	51.6	51.0
1991 Manhattan MT	48.2	52.1
1991 Klamath Falls OR	52.5	54.0
1991 Ontario OR	51.5	52.8
1991 Logan UT	50.0	52.7
1991 Pullman WA	48.4	51.8
1991 Powell WY	51.2	54.0
1992 Tammany ID	42.8	42.8
1992 Ferdinand ID	40.8	41.7
1992 Tulalake CA	49.4	50.7
1992 Fort Collins CO	50.7	51.3
1992 Aberdeen ID	51.8	54.1
1992 Moscow ID	50.5	51.6
1992 Bozeman MT	47.4	51.1
1992 Klamath Falls OR	54.0	53.0
1992 Ontario OR	49.3	49.5
1992 Logan UT	51.8	54.2
1992 Pullman WA	45.6	47.5
1992 Powell WY	48.0	53.0
Average test weight	47.9 **	50.0 **

\* Test weight expressed in pounds per bushel

\*\* Student Paired t = 6.948 - Significant at 0.01

3  
 TABLE 2: COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
 AND 'STEPTOE' FOR PLANT HEIGHT \*

Year/Location	Steptoe	PB1-88-6R-401
1988 Culdesac ID	89	102
1988 Potlatch ID	76	86
1988 Quincy WA	107	119
1989 Culdesac ID	89	94
1989 Potlatch ID	74	89
1990 Culdesac ID	104	104
1990 Ferdinand ID	79	84
1990 Potlatch ID	97	84
1990 Tammany ID	112	117
1991 Tammany ID	89	91
1991 Ferdinand ID	102	112
1992 Tammany ID	84	89
1991 Lethbridge ALB	90	105
1991 Aberdeen ID	97	99
1991 Bonners Ferry ID	89	82
1991 Moscow ID	97	93
1991 Bozeman MT	95	97
1991 Manhattan MT	109	119
1991 Klamath Falls OR	97	107
1991 Ontario OR	121	123
1991 Logan UT	98	102
1991 Pullman WA	105	113
1991 Powell WY	88	92
1992 Tammany ID	84	89
1992 Tulalake CA	96	115
1992 Aberdeen ID	89	97
1992 Moscow ID	74	76
1992 Bozeman MT	77	78
1992 Klamath Falls OR	76	84
1992 Ontario OR	107	96
1992 Logan UT	90	96
1992 Pullman WA	61	56
1992 Powell WY	81	99
Average plant height	91.6 **	96.6 **

\* Plant height expressed in centimeters

\*\* Student Paired t = 3.854 - Significant at 0.01

TABLE 4:    COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR LODGING SCORE \*

Year/Location	Steptoe	PB1-88-6R-401
1992 Tammany ID	5	4
1991 Lethbridge ALB	2	0
1991 Fort Collins CO	2	0
1991 Aberdeen ID	5	4
1991 Tammany ID	3	3
1991 Bonners Ferry ID	5	3
1991 Bozeman MT	0	1
1991 Manhattan MT	5	5
1991 Klamath Falls OR	3	1
1991 Ontario OR	5	4
1991 Logan UT	5	2
1991 Pullman WA	5	3
1991 Ferdinand ID	4	3
1990 Tammany ID	3	1
1990 Culdesac ID	2	1
1989 Ferdinand ID	2	1
1989 Potlatch ID	4	3
1989 Culdesac ID	4	4
1988 Culdesac ID	5	3
Average lodging score	3.6	2.4

\*    0 = 0% ;    1 = 1 to 5% ;    2 = 6 to 12% ;  
      3 = 13 to 25% ;    4 = 26 to 50% ;    5 = 51 to 100%

TABLE 5: COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR HEADING DATE \*

Year/Location	Steptoe	PB1-88-6R-401
1992 Tammany ID	140	144
1991 Lethbridge ALB	183.3	189.6
1991 Fort Collins CO	164	167
1991 Aberdeen ID	173	174
1991 Bonners Ferry ID	177	177.6
1991 Tammany ID	153	157
1991 Moscow ID	183.3	186
1991 Bozeman MT	180	185
1991 Manhattan MT	184	189
1991 Klamath Falls OR	186	188
1991 Ontario OR	154	153
1991 Logan UT	173	174
1991 Pullman WA	177	181
1991 Powell WY	174	176
1990 Tammany ID	152	152
1990 Culdesac ID	161	162
1989 Culdesac ID	165	168
1988 Potlatch ID	185	187
1988 Culdesac ID	168	169
Average heading date	170.1	172.6

\* Heading date expressed in days from January 1

TABLE 6:      COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR MILDEW      \*

Year/Location	Steptoe	PB1-88-6R-401
1988 Culdesac ID	15	8
1990 Culdesac ID	trace	5
1990 Tammany ID	2	1

\*      Mildew expressed as percentage of lower leaves  
infected

TABLE 7:      COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR PERCENT PLUMP SEED      \*

Year/Location	Steptoe	PB1-88-6R-401
1991 Lethbridge ALB	90.8	90.7
1991 Fort Collins CO	97.0	98.0
1991 Aberdeen ID	94.0	93.0
1991 Bonners Ferry ID	91.0	97.7
1991 Moscow ID	72.5	85.7
1991 Bozeman MT	77.7	57.0
1991 Manhattan MT	88.0	90.0
1991 Klamath Falls OR	96.0	97.4
1991 Ontario OR	92.0	97.0
1991 Pullman WA	83.0	75.0
1991 Powell WY	82.5	93.0
Average % plump seed	87.7	88.6

\*      Plump seed expressed in percentage of kernels  
over a 2.4mm (6/64) screen

TABLE 8: COMPARING SIX ROW SPRING BARLEYS 'PB1-88-6R-401'  
AND 'STEPTOE' FOR PERCENT THIN SEED \*

Year/Location	Steptoe	PB1-88-6R-401
1991 Lethbridge ALB	3.5	4.0
1991 Fort Collins CO	1.0	0.0
1991 Aberdeen ID	2.0	2.0
1991 Bonners Ferry ID	3.0	2.0
1991 Moscow ID	6.5	2.3
1991 Bozeman MT	13.5	14.0
1991 Manhattan MT	4.0	4.0
1991 Klamath Falls OR	0.7	0.5
1991 Ontario OR	3.0	1.0
1991 Pullman WA	7.0	13.0
1991 Powell WY	2.0	2.0
Average % thin seed	4.2	4.1

\* Thin seed expressed as percentage of kernels  
through a 2.2mm (5/64) screen

9300628

REVISED EXHIBIT E: STATEMENT FOR BASIS OF APPLICANTS  
OWNERSHIP

Plant Breeders 1 Inc. of Moscow, Idaho, is the owner and the breeder of the six row, feed type, spring barley 'PB1-88-6R-401'.